

Unshakable. Under Harshest Conditions.



Competence in Cement

we make processes work

Cement Production

Perfectly mixed, fed accurately and without pulsation,
precisely weighed "Quality meets Quality"



Perfect cement is the result of four overlapping processes where Schenck Process measuring and feeding devices with optimally integrated weighing technology play a major role.

Process Step 1:

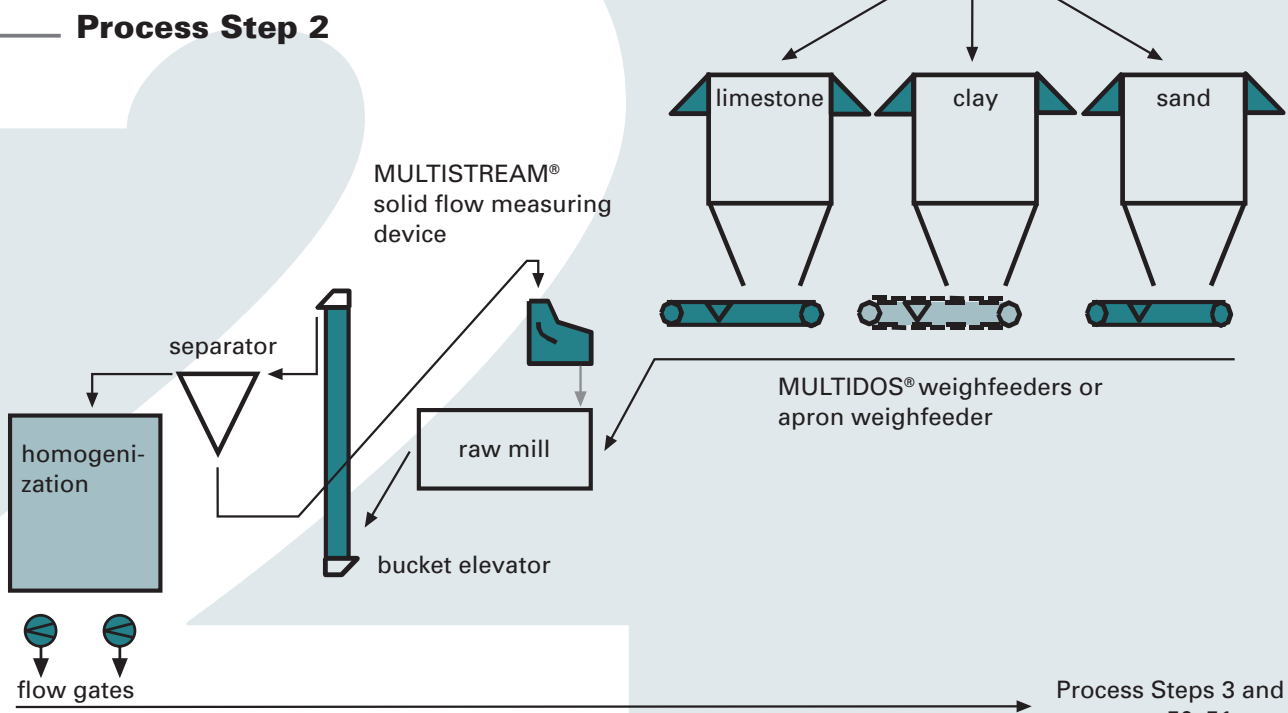
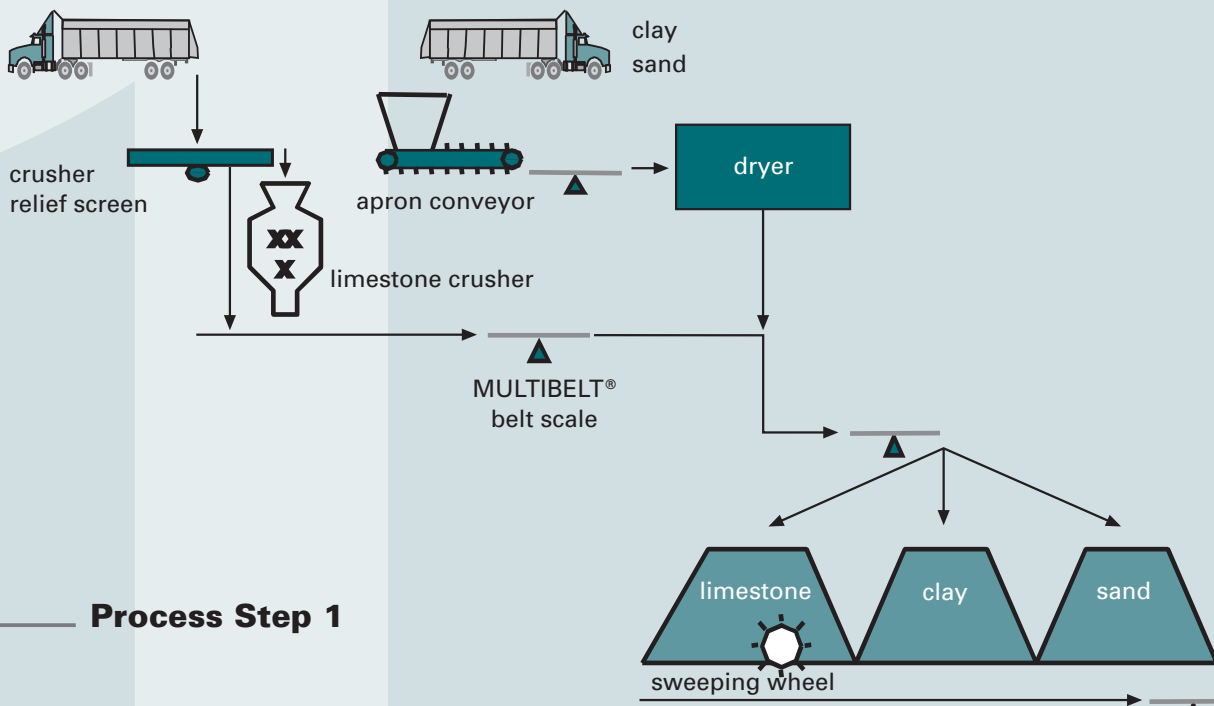
Limestone is mined at a quarry, crushed into small pieces, and stored in blending beds. Schenck Process MULTIBELT® belt scales record material quantities accurately and reliably under harsh conditions.

Process Step 2:

The crushed limestone is ground into raw meal. Additives, such as clay, sand, or iron ore, result in the desired chemical composition.

The Schenck Process MULTIDOS® weighfeeder will feed the various materials to the raw mill accurately and reliably. For poorly flowing materials, the MULTIDOS® VPD apron feeders can also be used.

After the material is ground, it is homogenized in blending silos.



Process Steps 3 and 4 on pages 50-51

Cement Production

**Perfectly mixed, fed accurately and without pulsation,
precisely weighed "Quality meets Quality"**

Process Step 3:

The raw mix is placed in rotary kilns and burnt at over 1,000 °C to produce clinker.

Different types of pulverized coal or secondary fuels are used to heat the kiln. Schenck Process MULTICOR® mass flow feeding systems can meter pulverized coal efficiently and without pulsation directly into the pneumatic lines that lead to the main burner (at the discharge end of the kiln) and the calcinator (at the feed end of the kiln). Schenck Process's semi-mobile compact system can meter secondary fuels such as shredded plastic, sawdust, and carpet scraps.

Also, the highly precise feeding of the raw meal into the heat exchanger is done by the Schenck Process MULTICOR® S mass flow feeding system or the MULTISTREAM® solid feeding system.

Process Step 4:

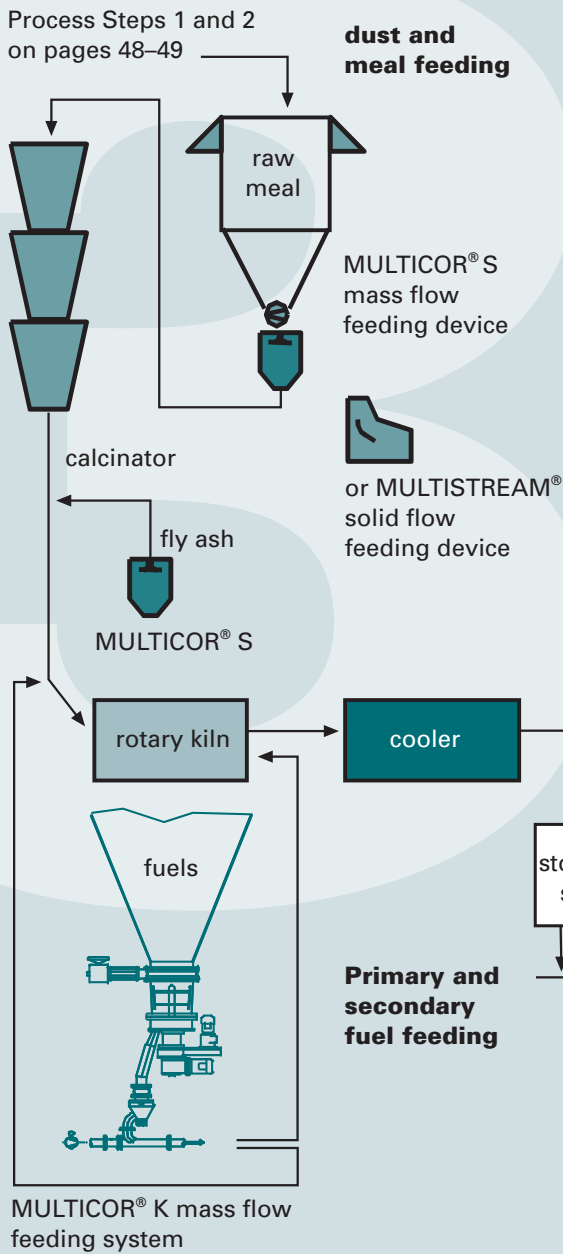
The clinker is ground into various types of cement. Apart from clinker and gypsum, various additives are also ground into the material (e.g. slag sand, trass, fly ash).

The MULTIDOS® weighfeeder feeds material into the mill similar to the earlier feeding of material into the raw mill. For dusty bulk materials, also the MULTICOR® mass flow feeding system can be used. (Mixing and loading plants also utilize MULTICOR® system technology and the LAS loading logistics solution.)

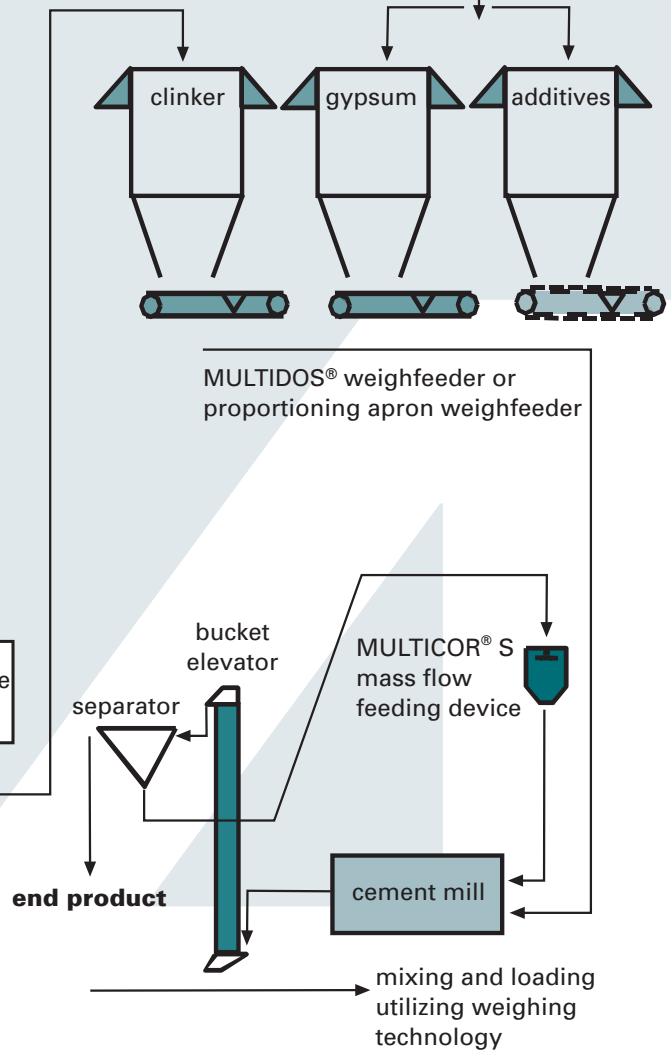
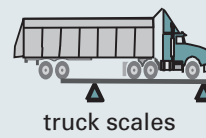
Our Solutions Package

- ❖ MULTIDOS® weighfeeders with a broad range of extraction and feeding devices for all types of bulk solids
- ❖ MULTIDOS® VPD apron feeders can also be used with difficult-to-discharge bulk solids
- ❖ MULTICOR® K and MULTICOR® S mass flow feeding systems for pulverized coal, raw meal, and fly ash
- ❖ MULTIDOS® feeding system in combination with star feeders for the pneumatic transport of secondary fuels
- ❖ MULTIBELT® belt scales, different models for the level of precision you need
- ❖ Silo weight recording using load cells or weighbeams
- ❖ LAS loading logistics solutions

Process Steps 1 and 2
on pages 48–49



Process Step 3



LAS loading logistics solutions

Process Step 4

Advantages

- ❖ Process-specific application expertise for efficient weighing and feeding systems for all materials used in the production process
- ❖ Also able to be used with pneumatic transfer technology
- ❖ Highest system availability despite harsh conditions
- ❖ Process-appropriate, stable measuring and feeding accuracies
- ❖ Your competent service team is available worldwide

Pulverized Coal Feeding

Guaranteed feeding constancy – for high product quality, efficient kiln operation and optimal emission values



Primary materials – perfectly fed and flexibly composed

Pulverized coal types, such as lignite, anthracite, charcoal, bituminous coal, oil coke, or mixtures of these fuels are used, as are oil shale, coke, and pulverized anodes, further broadening the spectrum of materials.

Applications:

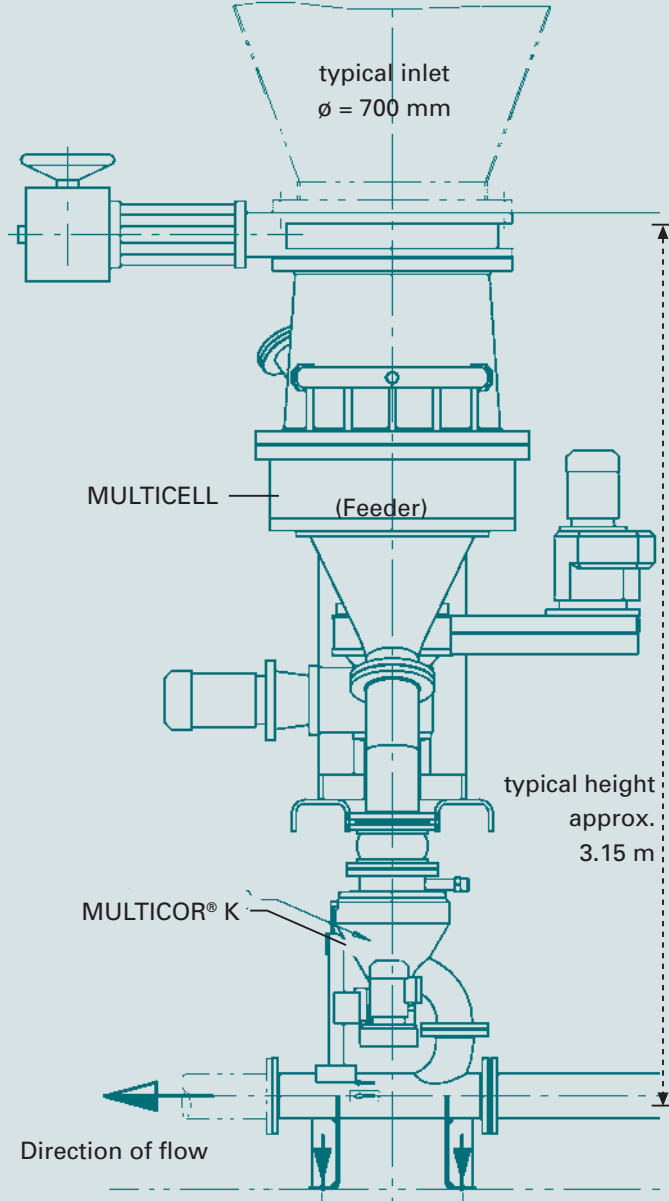
- ❖ Rotary kiln charging in cement plants (main burner and calcinator)
- ❖ Rotary kiln charging in lime plants (main burner)
- ❖ Shaft kiln charging in cement or lime plants
- ❖ Feeding of pre-heaters or reactors

Truly efficient use of the many varieties of pulverized coal requires a feeding technology whose reliability is equaled only by its accuracy. Stable temperatures, minimal excess air, and low oxygen content at the feed end of the kiln are all required to achieve consistently high product quality. The MULTICOR® Coriolis pulverized coal feeding system easily handles these requirements when paired with the pneumatic transfer system. It has a guaranteed feeding accuracy of $\pm 0.5\%$ and short-term feeding constancy of $\pm 1\%$, while still complying with limit values for SO_2 , NO_x and CO in the kiln and its emissions.

Two Basic Feeding Concepts

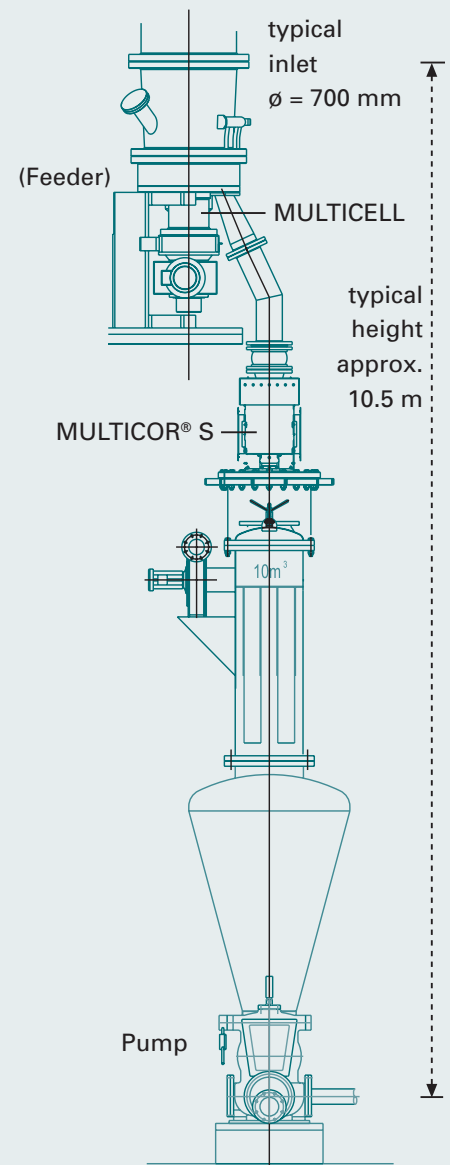
Feeding the burner at medium pneumatic transfer pressures

1. Direct feeding into the pneumatic conveyor line using MULTICOR® K and MULTICELL.



Feeding the burner at very high transfer pressures

2. Indirect feeding via a pump or star feeder into the pneumatic conveyor line using MULTICOR® S and MULTICELL.

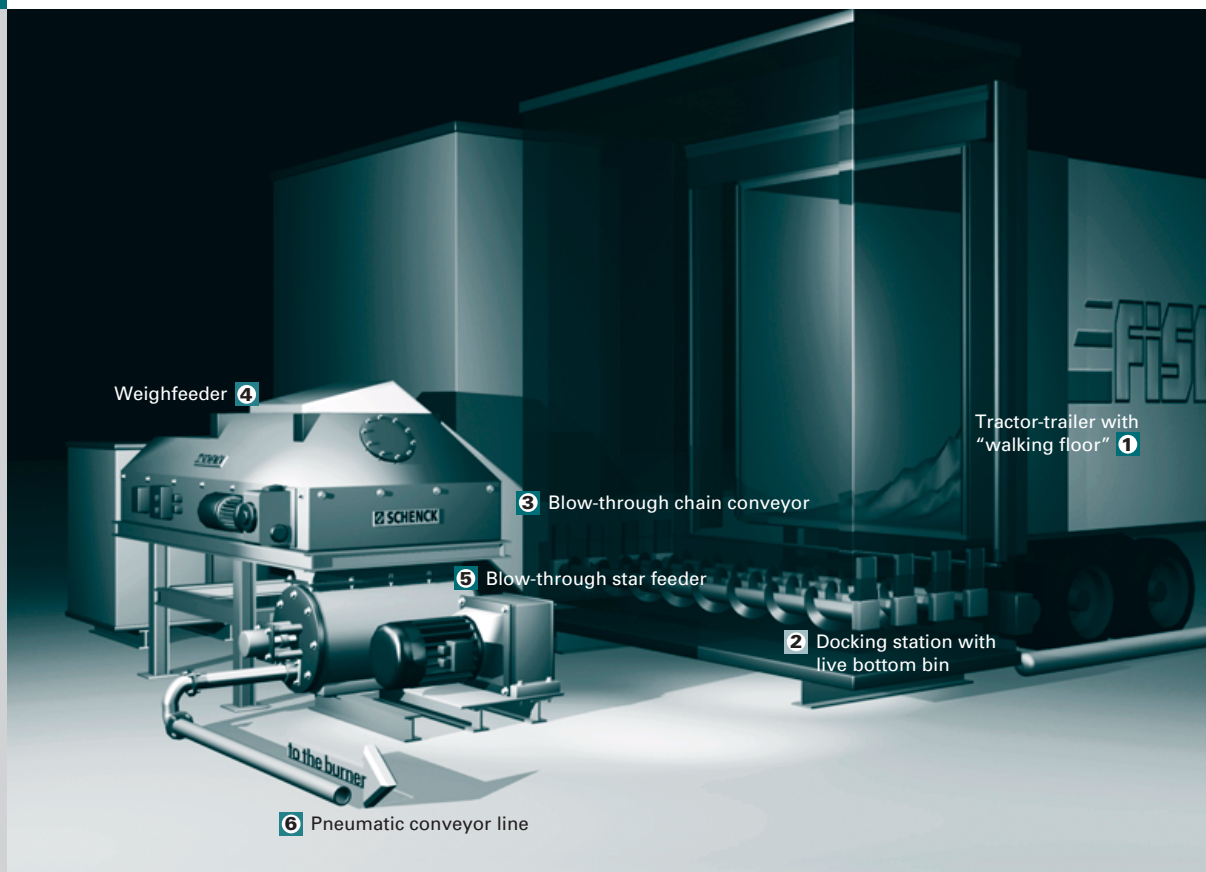


Advantages

- ❖ High feeding constancy for economical kiln operation
- ❖ Pulsation-free feeding
- ❖ Engineering and a complete system from a single source
- ❖ Schenck Process silo design and pneumatic engineering
- ❖ High-quality materials for MULTICOR®/MULTICELL provide excellent wear resistance
- ❖ Cutting-edge DISOCONT® process-adaptive electronic measuring and control system

Semi-mobile Compact System for Secondary Fuels

Economical, flexible, and safe –
in a mere 9 x 6 m of space



Using alternative fuels in your kiln or boiler provide great savings potential on energy costs. Possibilities range from conventional solid secondary fuels, such as shredded plastic and production waste, old tires, swarf, animal meals, and processed domestic waste – a broad spectrum of fuels that pose extremely difficult challenges to the feeding and conveying systems.

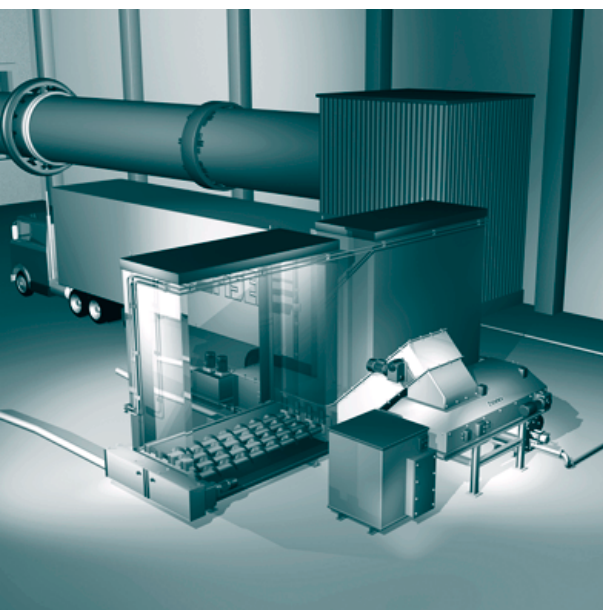
The semi-mobile compact system is an extremely effective and proven overall concept for the economical use of alternative secondary fuels in cement production plants.

Schenck Process offers flexible solutions, which include permanent, fixed-location systems as well as semi-mobile systems.

Getting the job done – with a minimum of investment

Neither reserve silos nor structural changes are required at the site for the semi-mobile system, and it only requires 9 x 6 m of space.

The secondary fuels are discharged directly from tractor-trailers (1) with “walking floors.” The vehicles are docked at the two unloading stations for this purpose. Via the extraction screws (2) and the troughed chain conveyor (3), the material is fed to the MULTIDOS® weighfeeder (4). The weighfeeder feeds the appropriate amount of fuel into the blow-through star feeder (5), where it is conveyed directly to the burner (6). The entire system is run from the control station; no extra personnel are required. The tractor-trailer operator handles fuel deliveries and trailer changes.



Advantages

The most economical system concepts

- ❖ Modular design
- ❖ Wide variety of materials can be processed
- ❖ Extremely flexible; easily adjustable to new fuels
- ❖ No silos required
- ❖ Limited space requirements
- ❖ Placement on simple slab
- ❖ Rapid set-up and dismantling
- ❖ Short ROI period

Reliable conveyor technology saves money

- ❖ Blow-through star feeder ensures even handling of fuel
- ❖ No personnel needed to operate; automatic operation via PLC
- ❖ Simple maintenance; all components are easily accessible
- ❖ Low energy consumption

Operational safety

- ❖ Reliable conveyor technology, accurate feeding technology using MULTIDOS® weighfeeders
- ❖ Check valve protects the system from kiln flashback
- ❖ Mobile storage of fuels (simple safety technology)
- ❖ Active dust removal solutions
- ❖ Separating technology (optional)

Possible applications

- ❖ Shavings, fibers, shredded plastic
- ❖ Mixed products
- ❖ Animal meals
- ❖ Max. feed rate up to 15 t/h [metric]
- ❖ Special large grain sizes possible up to 100 mm

Our solutions package

- ❖ Docking station with screw floors for tractor-trailers with “walking floor”
- ❖ Troughed chain conveyor
- ❖ Application-specific MULTIDOS® weighfeeder
- ❖ Optimized blow-through star feeder, injector solutions
- ❖ Pneumatic conveyor lines with blowers
- ❖ Measuring and control technology for continuous automatic operation, DISOCONT® and PLC technology
- ❖ Assembly and commissioning

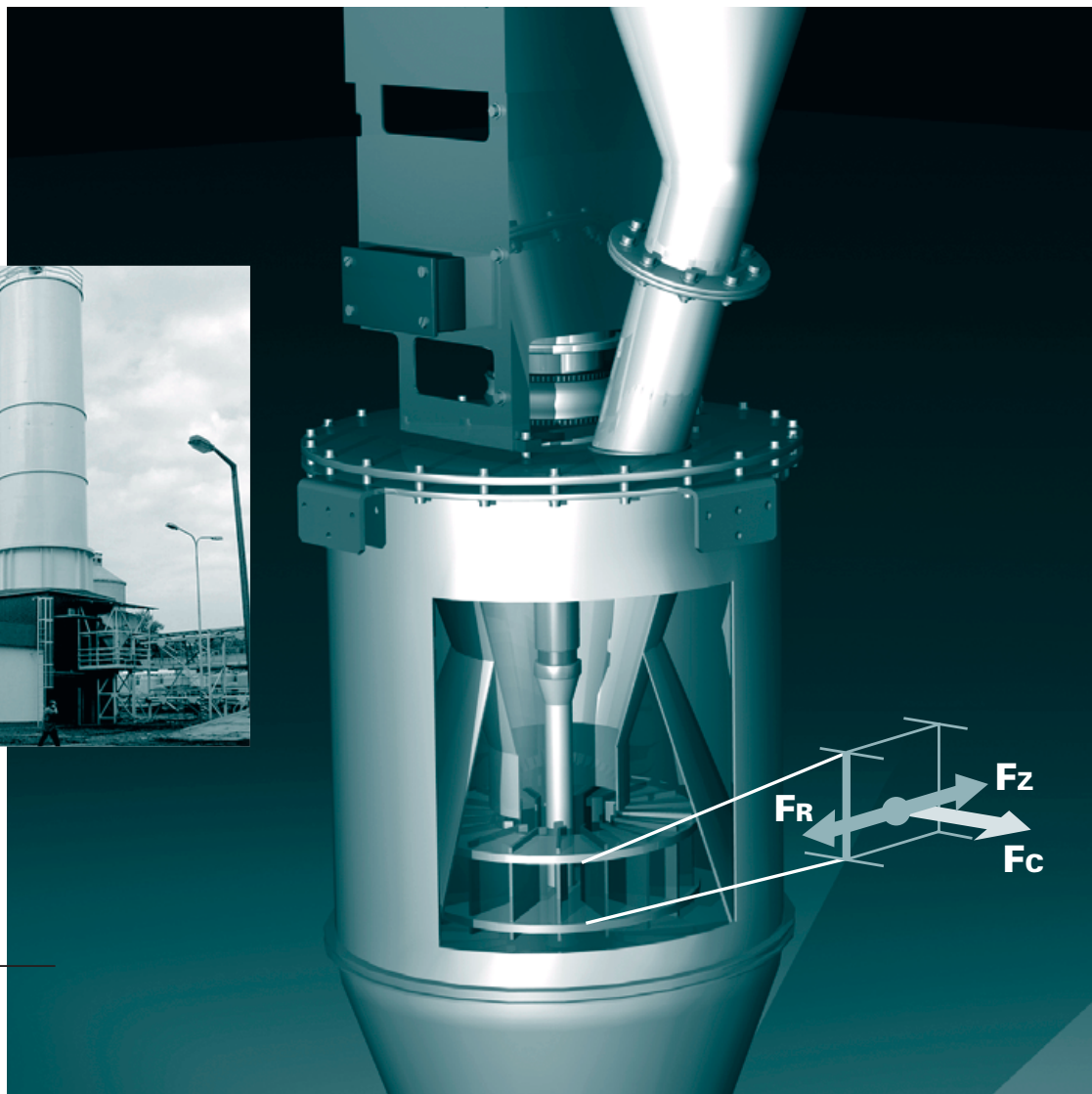
Feeding of Powdered Materials and Meal

Optimal feeding – extremely precise and trouble-free
for cement production process steps 3 and 4

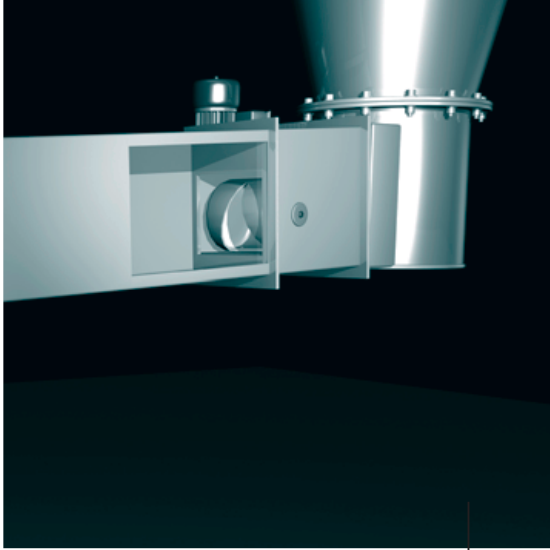


Module 3: Silo

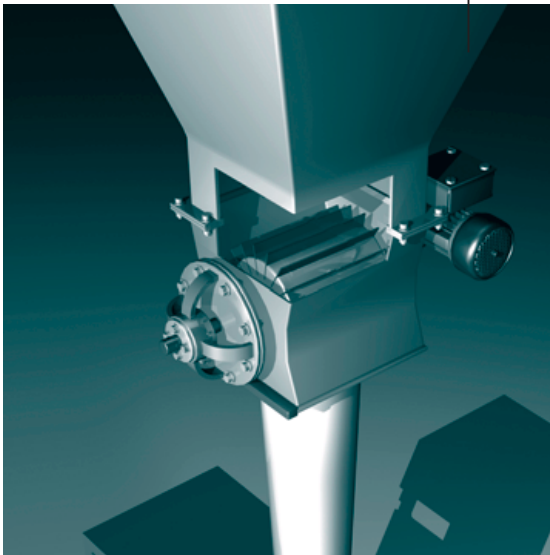
Module 1:
Mass flow
measurement with
MULTICOR® S



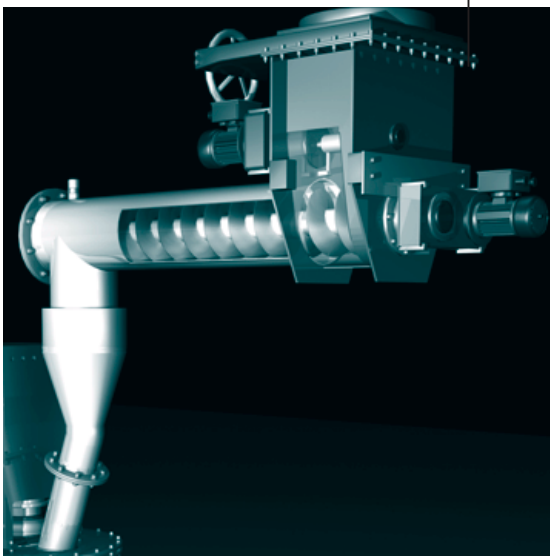
Feeding systems employing the principle of harmonized task sharing, guarantee trouble-free operation and highly accurate results. In principle, sustainable solutions are comprised of three modules: the mass flow silo (module 3), various optimized feeding hoppers for the controlled extraction of material from the silo (module 2), and the MULTICOR® S or MULTISTREAM® G for measuring the material flow (module 1). For module 3, Schenck Process also provides silo-engineering services to ensure that the extraction technology works properly.



Module 2:
Position-controlled
flowgate as
prefeeder



Module 2:
Speed-controlled
star feeder as
prefeeder



Module 2:
Speed-controlled screw
with integrated agitator
as feeder

Prefeeders, depending on the bulk material properties (module 2)

- ❖ Flow gate (position-controlled) for materials with free flowing properties; for applications up to approx. 800 m³/h
- ❖ Star feeders (speed-controlled) for materials with free flowing properties; for applications up to approx. 120 m³/h
- ❖ Feeding screws (speed-controlled) with integrated agitator for materials with free to moderate flowing properties for applications up to approximately 120 m³/h

Applications for complete solutions

Powder

dust: main portion < 0.1 mm, max. grain size 1 mm
(some individual particles may be larger)

Meal: main portion 0.1 mm–0.5 mm

- ❖ Raw meal feeding
- ❖ Fly ash feeding in the calcinator (substitute for clay component in raw meal) and in cement mills (as additive)
- ❖ Filter dust feeding (in cement mills as additive)
- ❖ Bypass cement feeding
- ❖ Powdered materials feeding in blending plants
- ❖ Pulverized coal feeding
- ❖ Powdered lime feeding in lime plants
- ❖ Finished cement feeding in the loading area

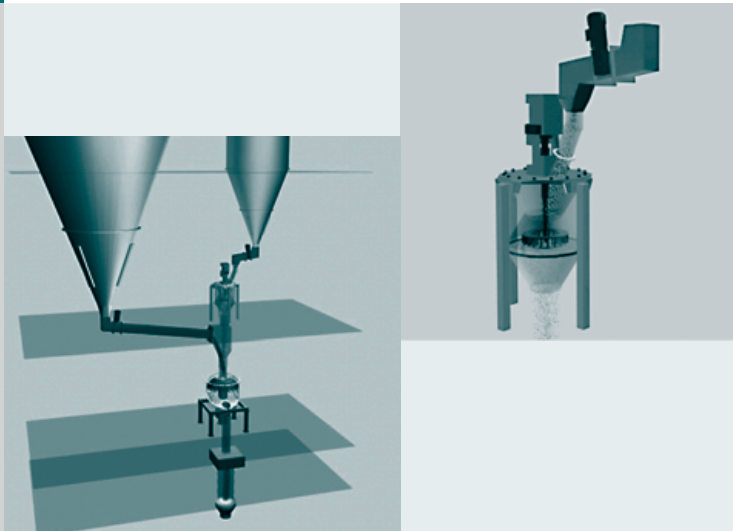
Also for use in other processes, such as:

- ❖ Additive feeding in steel mills
- ❖ Flue gas desulfurization in power plants

Advantages

- ❖ Modular feeding system design = flexible application options
- ❖ Highest accuracy because the concept is customized for the material being conveyed
- ❖ Cutting-edge process-adaptive measuring and control technology
- ❖ Systems solutions mean you get planning, delivery, installation, and service from a single source

“Two in One” – Mix and Feed Simultaneously Using the Coriolis Principle



For the production of special cement types before loading and shipping, a homogenous mixture of the component materials is needed. Until now, you had to go through several separate, costly process steps using mixers.

The MULTICOR® S feeding system greatly simplifies and reduces the expenditure in required equipment. Used as master, the MULTICOR® S feeds the main component. In addition, appropriate feeding systems are used (as slave) to feed the additives.

A rotating measuring wheel mixes the main component and the additives directly in the master MULTICOR® according to the Coriolis principle. No separate mixer is required, and you can realize almost any mixture. This just-in-time method also saves you the expense of intermediate transport technology and, in some cases, additional silos. In this concept, less is definitely more.

System Set-up:

MULTICOR® S feeds the exact proportion of the primary component needed as part of the total flow rate for all materials comprising the mixture.

As a prefeeder, we recommend a speed-controlled screw, a star feeder, or a position-controlled flow gate, depending on the material, desired feed rate, and flow properties.

The additives are fed directly from the slave feeding system to the MULTICOR® measuring wheel. Depending on the desired feed rate and the material flow properties, either the MechaTron® Loss-in-Weight Feeder or the MULTICOR® feeding system is used.

Sample Applications

Bagging Plant

This setup: total feed rate for all components approx. 40 t/h [metric]

- ❖ MULTICOR® S for feeding the main cement component and for the mixture
- ❖ MechaTron® for the additional feeding of the kiln dust

Cement Loading

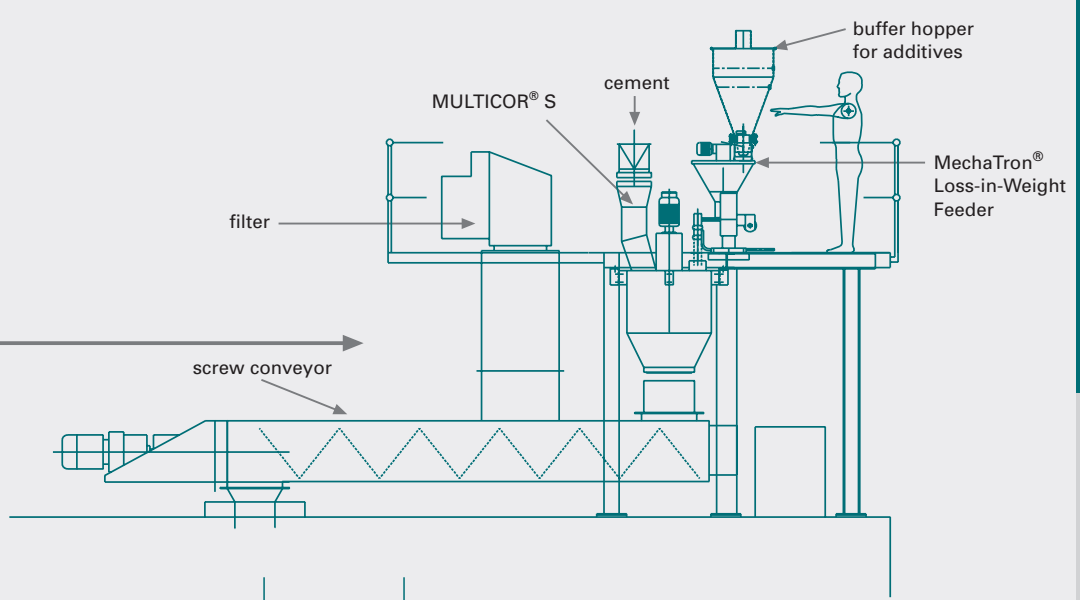
This setup: total feed rate for all components approx. 150 t/h [metric]

- ❖ MULTICOR® S for feeding the main cement component and for the mixture
- ❖ MULTICOR® S for the additional feeding of additives

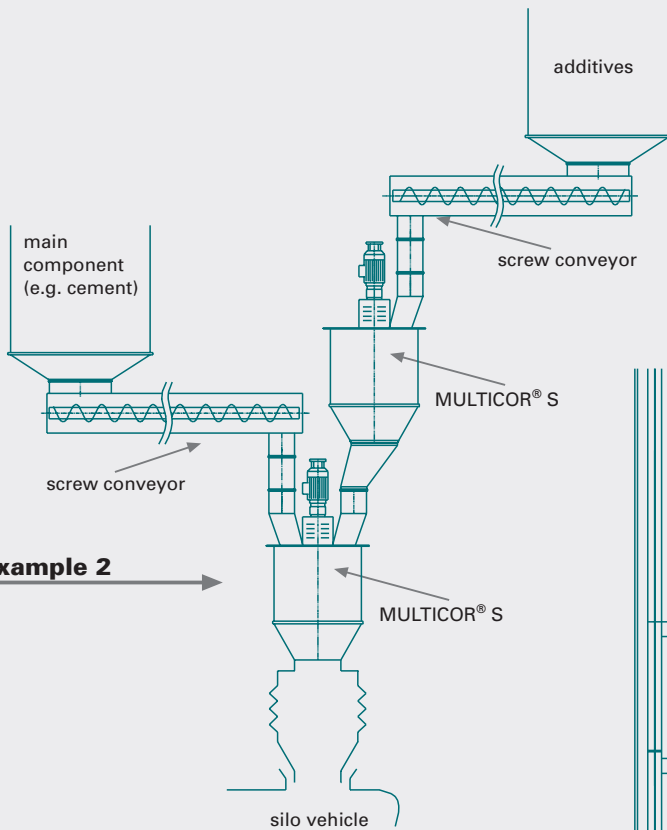
This setup: total feed rate for all components up to 300 t/h [metric]

- ❖ MULTICOR® S for feeding the main cement component and for the mixture
- ❖ MULTICOR® S for the additional feeding of additives

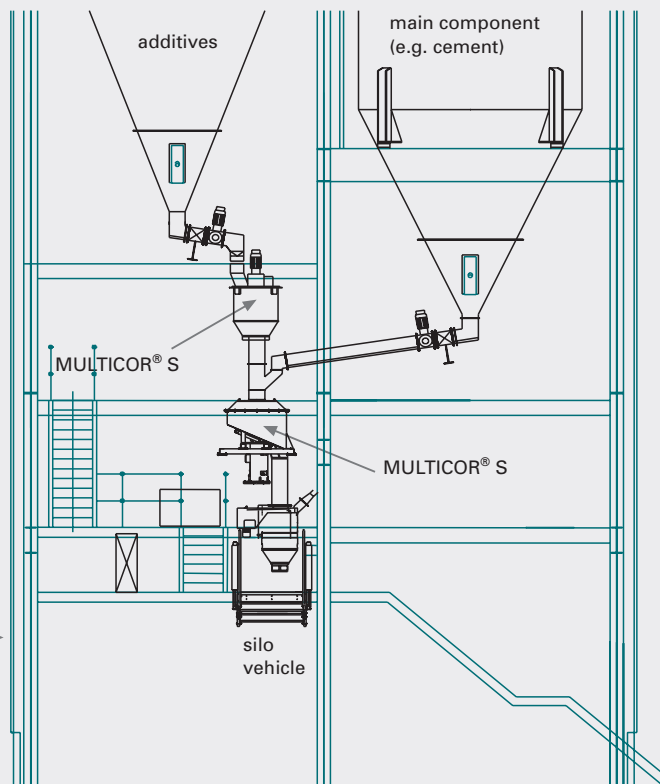
Example 1



Example 2



Example 3

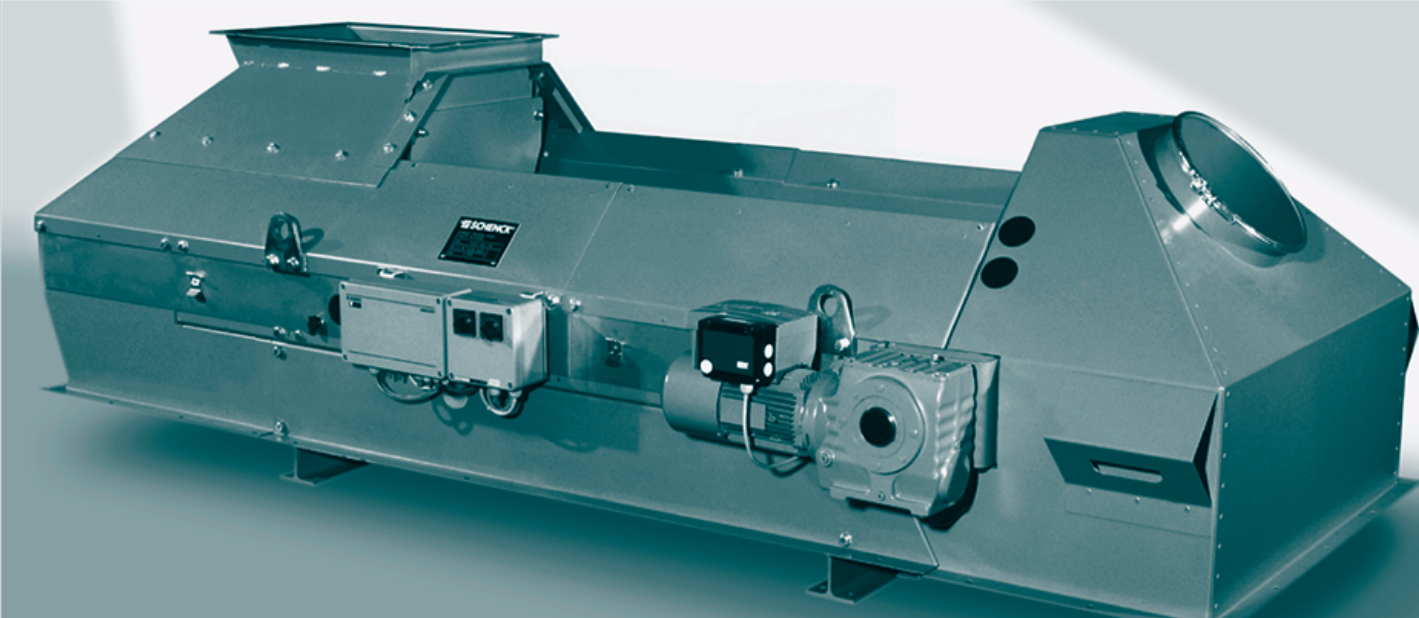


Advantages

- ❖ Homogenous material mixing
- ❖ Significantly reduced investment because separate mixer is no longer needed
- ❖ "Just-in-time" mix production eliminates the need for storage silos
- ❖ Almost any ratio of components can be mixed
- ❖ Trouble-free extraction of material with the selection of the optimal feeder
- ❖ Highest accuracy and feeding constancy ensured by MULTICOR® S
- ❖ Cutting-edge process-adaptive measuring and control technology

MULTIDOS® – the MechaTronic System

Weighfeeder for continuous gravimetric feeding –
precise, economical, reliable



A system for all feeding and weighing applications with accuracies up to $\pm 0.25\%$ has been created in the form of the Schenck Process MULTIDOS® family with application-specific series to fit every need. MULTIDOS® MTD-M series weighfeeders cover a wide range of applications requiring medium to high feed rates. The MULTIDOS® MTD-H weighfeeders are perfect for applications requiring high feed rates, high-bulk-density materials, and extremely high removal moments, even with large silo discharge openings. A broad spectrum of active and passive bulk material feeders that are specially designed for specific bulk material properties supports the wide range of possible applications.

Possible Applications:

- ❖ Feeding of chunky, granular bulk materials (e.g., clinker, gypsum, lump coal)
- ❖ Feeding of all powdery or mealy bulk solids (e.g., raw meal, fly ash, filter dust) with appropriate charging devices
- ❖ Feeding of poorly flowing bulk materials (e.g., clay, marl, gypsum from flue gas desulfurization systems)
- ❖ Charging of raw and cement mills
- ❖ Kiln charging
- ❖ Mixture formation in gravel quarries and in the hard stone industry
- ❖ Mixture formation in smelting and coke plants
- ❖ Coal mill charging
- ❖ Feeding tasks in all mining-related industries
- ❖ Chemical industry, food industry (special design)



100% MechaTronic

Conveying technology, sensors, weighing mechanics, measuring and control electronics, and AC drive technology are intelligently integrated into a single weighing system at one site.

Bulk Solids Charging Devices

Selection of the appropriate bulk solids charging depends on the flow properties of the bulk solids:

- ❖ Free-flowing, poorly flowing, sticky, flushing
- ❖ Range of grain sizes
- ❖ Moisture
- ❖ Feed rate

Options

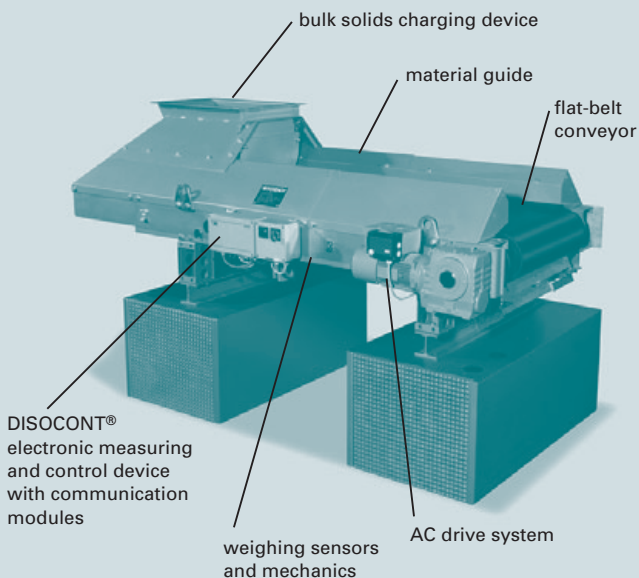
- ❖ Conveyor cover
- ❖ Discharge hood

MechaTronic Advantages

- ❖ "Plug and play" capability
- ❖ No need for control cabinets
- ❖ Fewer cables
- ❖ On-site calibration
- ❖ Manageable system
- ❖ Cost reduction

Quality Features

- ❖ Weighing mechanics with no pivot point nor guides
- ❖ Automatic belt tracking system
- ❖ Weighted belt tensioning system, high-end continuous weigh belt
- ❖ Automatic belt cleaning system (both sides)
- ❖ Belt influence compensation (BIC) using smart software in the weighing electronics
- ❖ Self-calibrating system (KME), upon request



Our Solutions Package

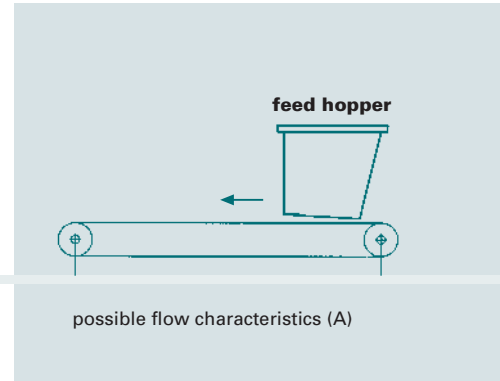
- ❖ Flatbelt conveyor optimized for precise weighing
- ❖ Three-phase AC drive system with speed sensor
- ❖ Integrated weighing sensors

Advantages

- ❖ Constantly designed for accuracy and reliability, the Loss-in-Weight Feeder has been continually refined for the last 50 years to become today's MULTIDOS® system
- ❖ "Less is more" design, e.g., the measuring roller is placed directly on two load cells. The MechaTronic concept ensures stable feeding results over the long term
- ❖ Low maintenance due to lifetime lubrication of the bearings and weighted belt tensioning system
- ❖ On-site or remote weighing system calibration via PC, local field office or host computer
- ❖ Cutting-edge, process-adaptive, modular electronic measuring and control system equipped with fieldbus technology
- ❖ Wide feed rate adjustment range

MULTIDOS®

Continuous gravimetric feeding –
precise, economical, reliable and modular



Basic MULTIDOS® Data

- ❖ System accuracy: $\pm 0.25\%$
(with respect to the actual feed rate)
- ❖ Feed rate adjustment range (t/h) up to 1:50
- ❖ See table for pulley centers and conveyor belt width

Options

For material temperatures greater than 80 °C:

- ❖ High-temperature conveyor belt for use with materials up to a maximum of 170 °C.

For dust protection:

- ❖ Discharge hood
- ❖ Conveyor belt covering
- ❖ Side and rear cladding

Hopper liners (high wear resistance):

- ❖ Manganese steel, HARDOX, EURODUR, polyethylene, ceramic – other materials upon request

For dusty or mealy bulk solids:

- ❖ Flexowell edges

For belt cleaning (for sticky materials):

- ❖ Hard-metal scraper

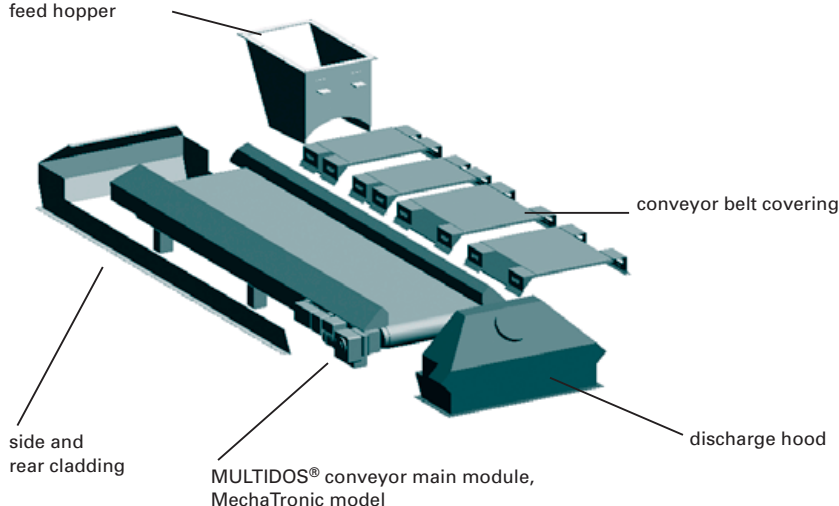
Possible flow characteristics (A)

- ❖ Free-flowing, mainly chunky
- ❖ Appropriate bulk material charging:
 - Direct extraction hopper T40/T60, T20, T70

⁽¹⁾ For other bulk densities up to $\gamma_{max} = \text{approx. } 2.5 \text{ t/m}^3$, the maximum feed rate can be calculated using a proportional conversion.

Modular:

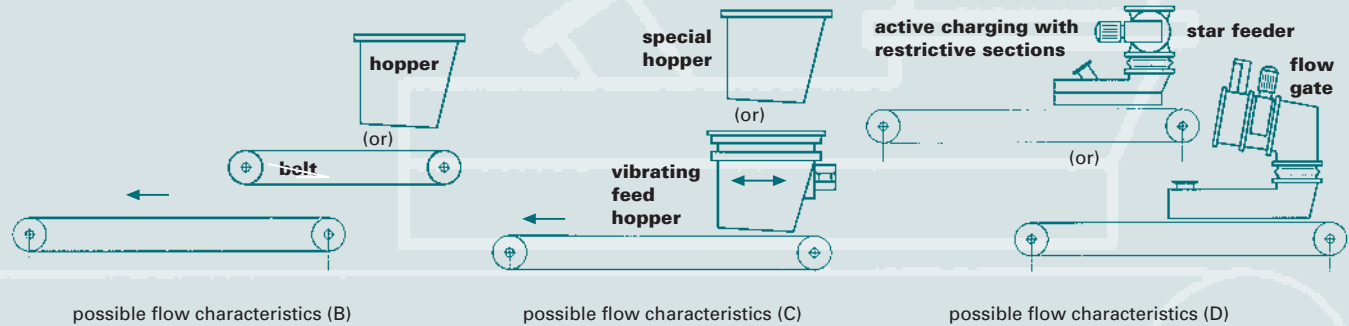
feed hopper



side and rear cladding

MULTIDOS® conveyor main module, MechaTronic model

		Belt width
Min. pulley centers (mm)	MULTIDOS® MTD	650
		max. pulley centers 12,000 mm
Min. pulley centers (mm)	MULTIDOS® MTD	800
		1,000
		1,200
		1,400
		1,600
Min. pulley centers (mm)	MULTIDOS® HTD	1,400
		max. pulley centers 12,000 mm
		1,600
		1,800
		2,000



Possible flow characteristics (B)

- ❖ Poor flowing to sticky, chunky with fines
- ❖ Appropriate bulk material charging: T81/T82
- ❖ Discharge apron feeder (speed-controlled)
- ❖ Vibratory feeder

Possible flow characteristics (C)

- ❖ Moderately flowing, bridging, chunky with fines
- ❖ Appropriate bulk material charging:
 - Hopper for special duty (T90)
 - Vibratory hopper (hopper with vibratory unit) V50/V51, V60/V61

Possible flow characteristics (D)

- ❖ Fluidizing, flushing, dusty, fine-grained
- ❖ Appropriate bulk material charging:
 - Star feeder (speed-controlled)
 - Flow gate (position-controlled)
 - Feeding screw (speed-controlled)

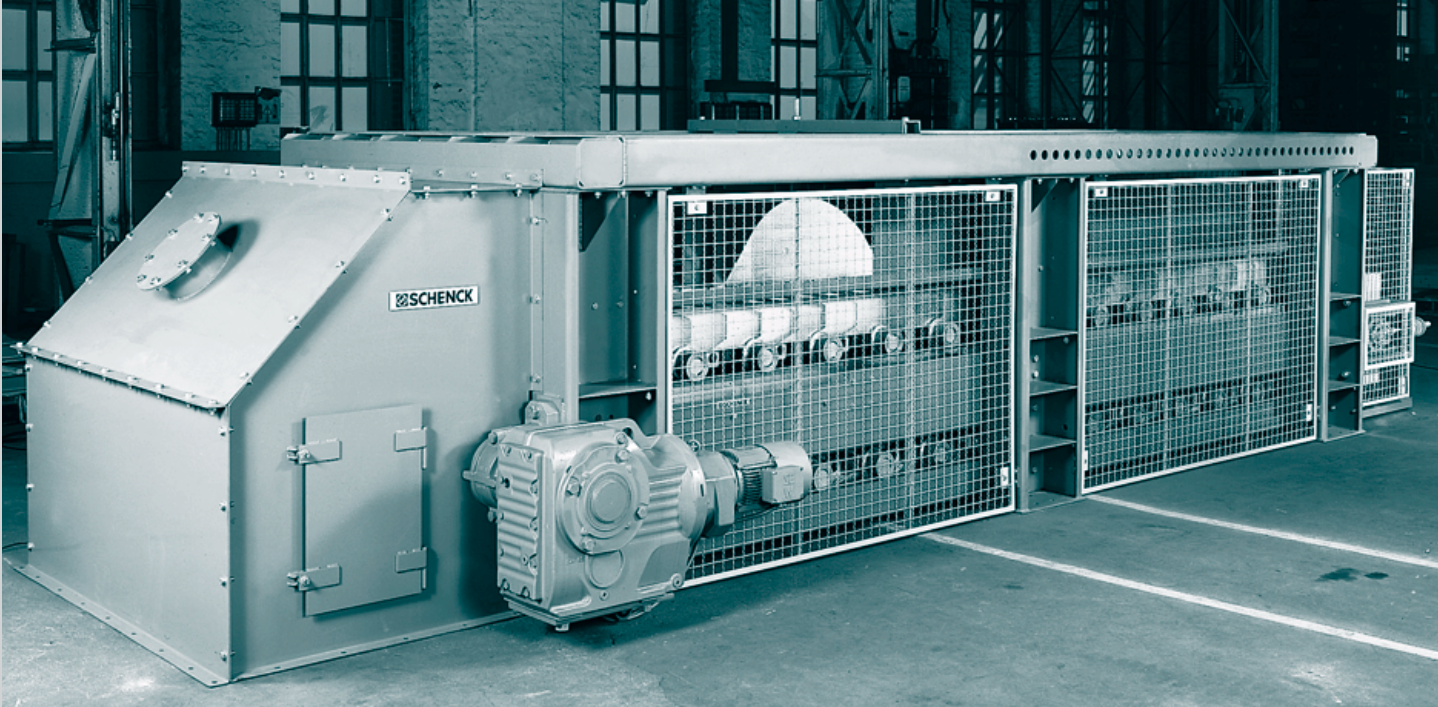
MULTIDOS®

Maximum feed rate (t/h) at bulk solids weight $\gamma = 1 \text{ t/m}^3$ ⁽¹⁾

Bulk material feeding for direct extraction hopper						Prefeeder for bulk material charging			
T40/T60	T20	T70	T90	V50/V51	V60/V61	Flow gate		Star feeder	
1,500	2,000	2,700	2,700	2,000	2,700	3,500		3,500	
						Dust	Meal	Dust	Meal
70									
150				80			80	40	50
190	250	250	250	250	250	50	120	50	50
250	320	350	250	350	350	70	160		
300	450	450	250	450	450	100	200		
	T20/T30	T80	T81	T82	V60/V61				
	2,700	3,500	4,500	5,500	3,500				
	370	260	195	175	370	100	200		
	440	330	240	220	500	120	260		
	540	410	300	270	590	150	300		
	700	470	350	350	700				

MULTIDOS® VDP

An apron weighfeeder for poor-flowing materials –
because there's no such word as "impossible"



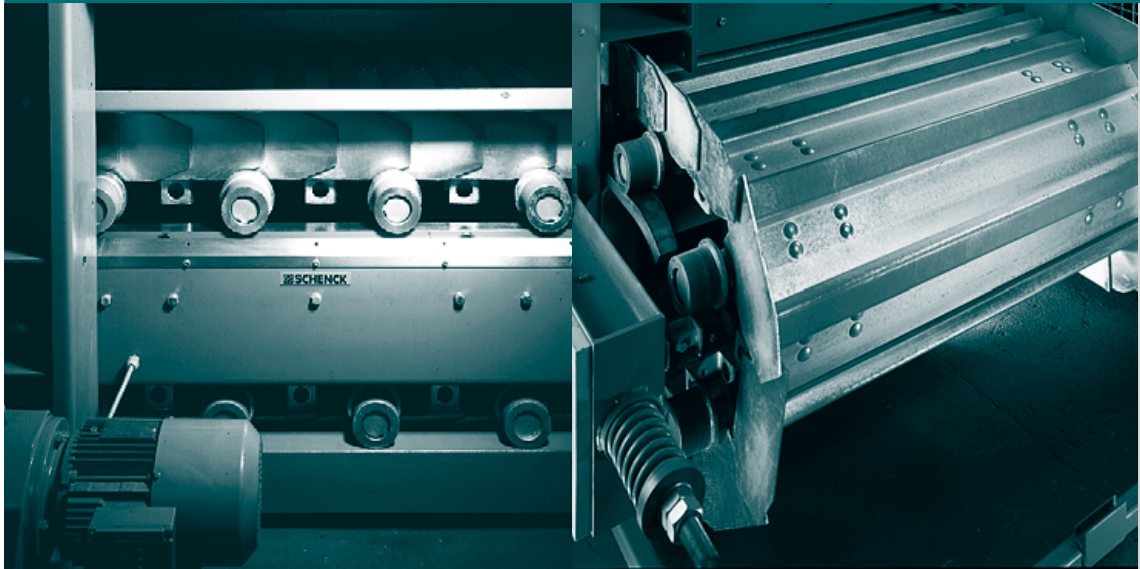
Schenck Process apron weighfeeders are used for continuous gravimetric feeding of poorly flowing bulk materials from silos. The MULTIDOS® system makes the impossible possible: it reliably feeds even "sticky" materials such as clay, marl, trass or sludge with the high accuracy a weighfeeder can provide. Extraction apron feeders used as prefeeders for conventional weighfeeders or volumetric prefeeders are no longer needed. Weighing technology integrated in the track allows VDP apron weighfeeders to perform both silo discharge and gravimetric feeding functions. This results in significantly better feeding accuracy compared with volumetric extraction apron feeders, which ultimately means a stable, repeatable improvement in quality in the mixing plants and an excellent return on investment.

Possible Applications

- ❖ Charging of raw and cement mills in cement plants
- ❖ Feeding of bauxite in aluminum plants
- ❖ Feeding of poor-flowing materials in mines and quarries
- ❖ Feeding of returns/sludges in metallurgical plants

Advantages

- ❖ Combination of silo discharge and gravimetrically controlled feeding in one aggregate
- ❖ Low investment costs compared to separate aggregates
- ❖ Integrated heavy-load weighing technology ensures high feeding accuracy ($\pm 1\%$) related to the actual feed rate



Our Solution Package:

- ❖ Robust extraction apron feeder
- ❖ AC drive group with speed sensor for speed control
- ❖ Weighing technology integrated into the track mechanics
- ❖ Feed hopper
- ❖ Electronic measuring and control device
- ❖ Self-cleaning extraction plates minimize material loss beneath the apron weighfeeder
- ❖ Integrated pin gate in the frame
- ❖ Discharge aid roller to improve material discharge
- ❖ Scraper conveyor beneath the apron weighfeeder

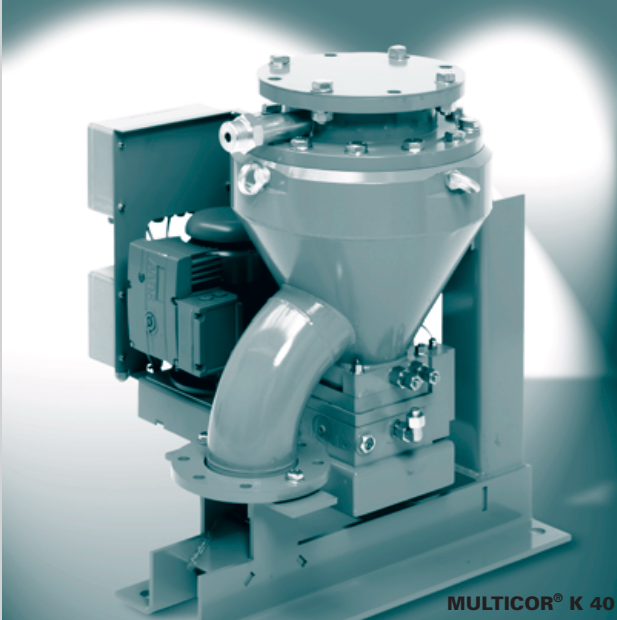
(1) at $\gamma = 1.4 \text{ t/m}^3$

MULTIDOS® VDP

Belt width in mm (inch)	1,000	1,200	1,400	1,600
Max. feed rate [t/h] ⁽¹⁾	300 (max. 220 m ³ /h)	430 (max. 310 m ³ /h)	575 (max. 420 m ³ /h)	665 (max. 475 m ³ /h)
Accuracy with respect to actual feed rate			$\pm 1\%$	
Adjustment range			1:10	
Removal cross-section, length-width [mm]	2,250 – 900	2,500 – 1,100	2,500 – 1,300	2,500 – 1,500
Available pulley centers for each belt width [mm]		5,120; 5,600; 6,080; 6,560; 7,040; 7,520; 8,000		
Options				
Pins for pin gates			❖	
Discharge-aid roller			❖	
Scraper conveyor			❖	

MULTICOR® K and MULTICELL

The pressure-proof mass flow feed system using the Coriolis principle with a horizontal star feeder – an unbeatable team



Optimal Pulverized Coal Feeding

Economical, high-quality, reliable pulverized coal feeding results from the interplay of overall system engineering, material discharge, feeding, and pneumatic material transport. System components that are perfectly matched to each other are a must for success.

1. Pulsation-free silo extraction

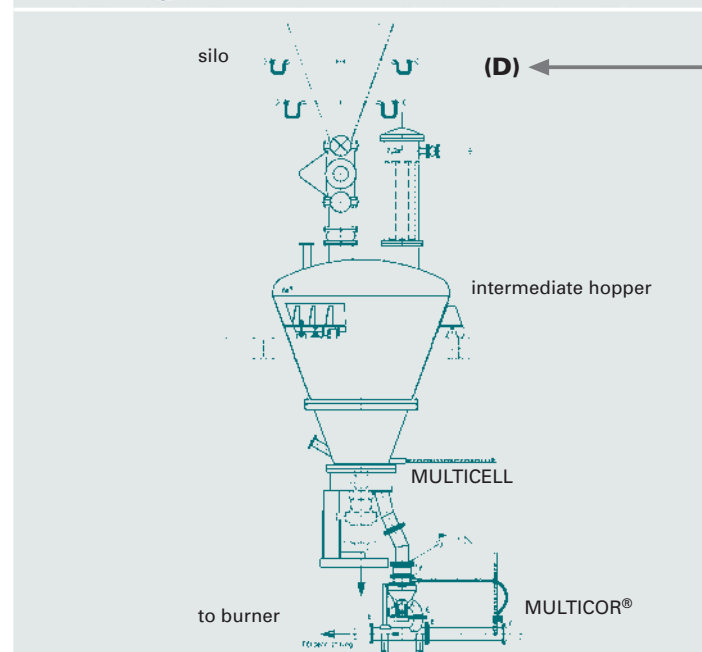
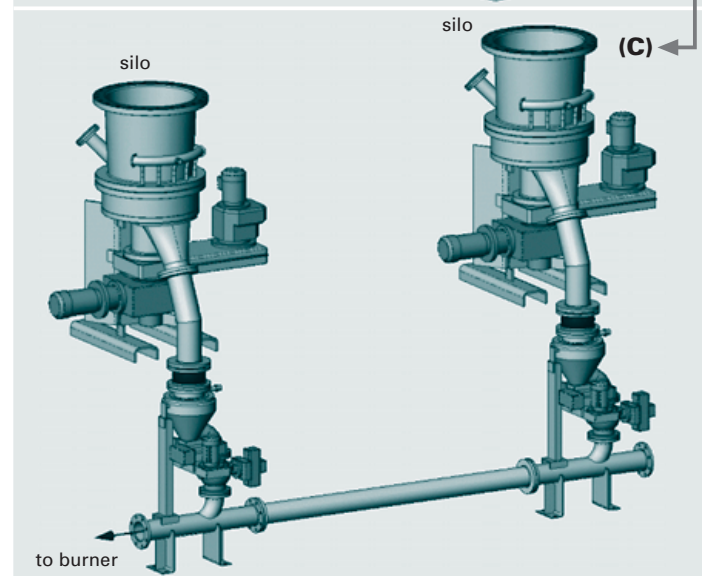
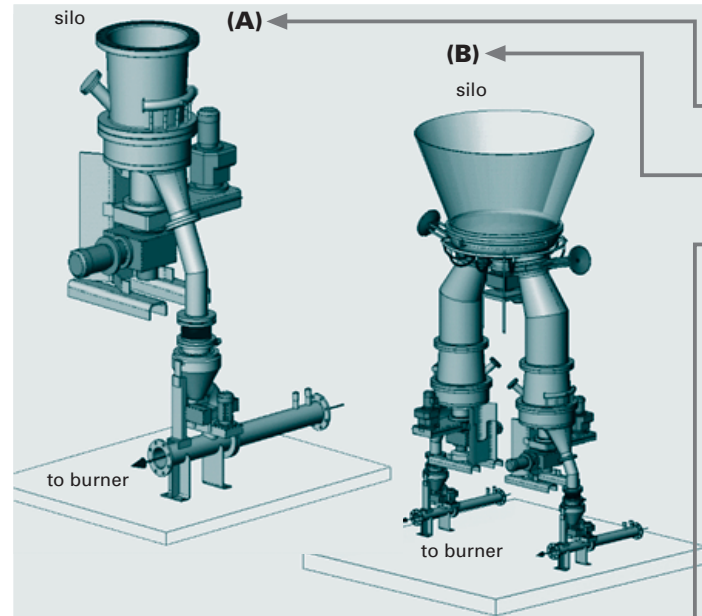
At the beginning of the process chain, Schenck Process Silo Engineering stands for mass flow. The large silo outlet and the agitation system integrated into the horizontal star feeder ensure the homogenization of the material and its pulsation-free discharge from the silo.

2. Exact measurement – excellent feeding performance

The material flow is measured quickly and precisely using the Coriolis principle, which is unaffected by outside influences. The MULTICELL horizontal star feeder's speed control performs the direct mass flow measurement. This ensures that the actual feed rate corresponds exactly to the specified nominal value.

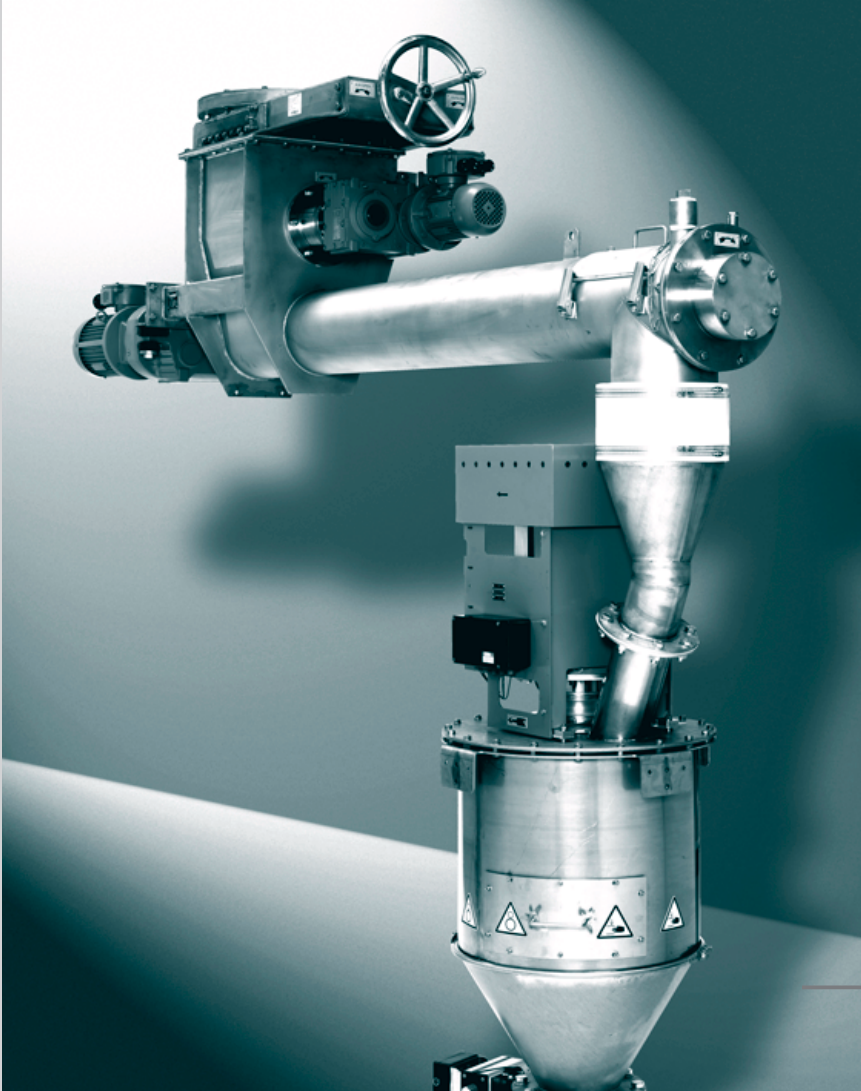
3. Pulsation-free transport

Schenck Process Engineering ensures that the pneumatic conveyor line is laid out in an ideal fashion. The required amount of air and the conveyor cross-section are calculated to ensure optimal transport of the fuel from the feeder to the burner. The exact design pressure and intake volume of the blower are also determined.



MULTICOR® S

Mass flow meter based upon the Coriolis principle for many dry materials and applications



Active principle of the Coriolis force

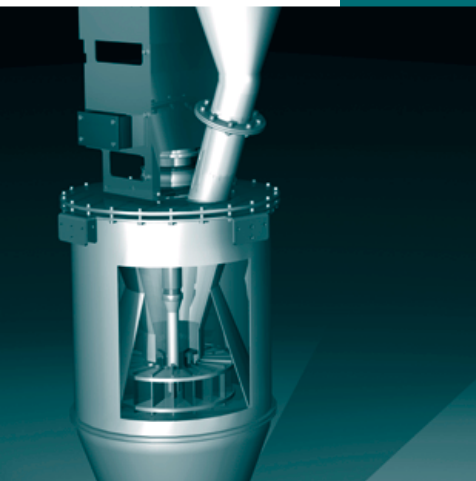
The bulk solids hit a rotation measuring wheel. Due to the centrifugal force the bulk solids particles on the vane are moved outward. On the measuring wheel – by the acceleration in direction of the circumference – the bulk solids are subject to the Coriolis force. This force as measurable size is seized proportional to the gravimetric feed rate even with changing bulk density or different grain size.

MULTICOR® S with Prefeeder

Highly accurate feeding according to the Coriolis principle. MULTICOR® S by Schenck Process measures the material flow with an accuracy of $\pm 0.5\%$; precisely and economically. Whether it be measuring of throughput and consumption for in-plant inventory, measuring of returns in mills, continuous feeding and charging of materials in a process, or optimization of loading processes. With MULTICOR® S and the Coriolis technology mass flows are exactly measured and fed in conjunction with an adjustable prefeeder.

Advantages

- ❖ Direct, rapid recording of measurements provides a unique feeding principle for bulk solids
- ❖ Direct material stream for maximum measurement and feed precision.
Feed constancy of $\pm 0.5\%$ based upon actual feed rate in the specified feeding range
- ❖ In-line implementation and compact construction for low installation costs
- ❖ Low maintenance and repair costs
- ❖ Deliverable with legal-for-trade capability
- ❖ Permissible material temperature up to $130\text{ }^{\circ}\text{C}$
- ❖ In-line measuring in a sealed, dust tight housing for a clean environment
- ❖ High-quality materials are optionally available for protection against wear
- ❖ Measurement principle unaffected by changes in material weight and different grain sizes



Our Solution Package

- ❖ Dust-tight, stainless steel housing with inspection opening
- ❖ Measuring wheel with vanes
- ❖ Weighing module – external
- ❖ AC gear motor with speed sensor
- ❖ All parts coming into contact with bulk solids made of stainless steel

Options

- ❖ Protective coating for measuring wheel
- ❖ Rubber coating on the housing interior (max. temperature of bulk solids is or $80\text{ }^{\circ}\text{C}$ for sound-proofing and for abrasive bulk solids
- ❖ Ceramic coating of the interior housing for highly abrasive bulk solids
- ❖ Sound-proofing by cladding the equipment with insulant
- ❖ Special coating of measuring wheel
- ❖ Legal-for-trade version

MULTICOR® S Mass Flow Meter

	S 40	S 80	S 160	R 450	R 800
Feed Rate Measuring Unit	min. 0.5 t/h [metric] – max. 20 t/h [metric] (max. 40 m ³ /h)	min. 2 t/h [metric] – max. 60 t/h [metric] (max. 80 m ³ /h)	min. 6 t/h [metric] – max. 150 t/h [metric] (max. 160 m ³ /h)	min. 45 t/h [metric] – max. 400 t/h [metric] (max. 450 m ³ /h)	– max. 650 t/h [metric] (max. 800 m ³ /h)
Feed Rate Feeding Unit					
Prefeeder screw and star feeder,	max. 40 m ³ /h	max. 80 m ³ /h	max. 120 m ³ /h	max. 120 m ³ /h	
Prefeeder flow gate	max. 40 m ³ /h	max. 80 m ³ /h	max. 160 m ³ /h	max. 450 m ³ /h	max. 800 m ³ /h
Measuring/feeding range			1:10		
Material temperature			max. 130 °C		
Grain size		max. 5 mm		max. 8 mm	
Bulk density			> 0.3 t/m ³ [metric]		
Precision based upon actual feed rate	> 0.5 t/h [metric] $\pm 1\%$ > 2 t/h [metric] $\pm 0.5\%$	> 2 t/h [metric] $\pm 0.5\%$	> 10 t/h [metric] $\pm 0.5\%$	> 45 t/h [metric] $\pm 0.5\%$	> 80 t/h [metric] $\pm 0.5\%$

MULTISTREAM® G

Continuous solids flow feeding – without impact – for stable results



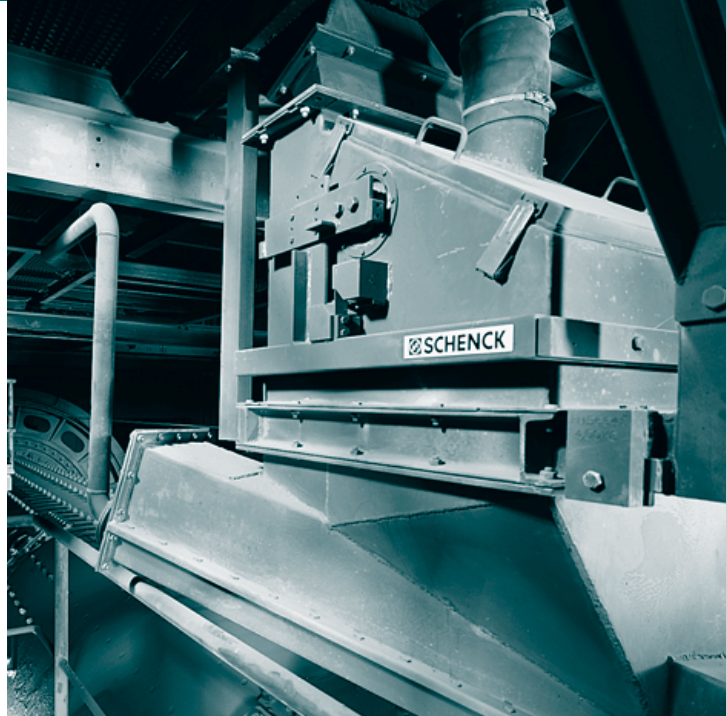
The MULTISTREAM® G series establisher continuous bulk solids streams using non-impact force measurement on an in-line measuring chute that “gently” deflects the material stream. The system ensures that impact factors, which vary depending upon the bulk solids, are not incorporated into the results. This means that MULTISTREAM® G generates better reproducible data improving your product quality. With its dust-tight, robust construction, MULTISTREAM® G in conjunction with a flow-controlled prefeeder becomes a feeding system and can even be specially equipped for hot materials. Naturally, we supply everything from a single source: planned, delivered, and supported by Schenck Process.

Advantages

- ❖ Cost-effective, complete solution
- ❖ Dust-tight, robust construction
- ❖ Measuring and guide chute integrated into housing
- ❖ Available with integrated on-site evaluation electronics

Applications

- ❖ Throughput and consumption measurement of bulk solids
- ❖ Measuring of grain flows in mills
- ❖ Feeding of additives
- ❖ Feeding of raw meal
- ❖ Batching at mixers
- ❖ Charging in loading stations



MULTISTREAM® G Mass Flow Meter

	G 400	G 750	G 1250
Feed rate Measuring unit	min. 4 t/h [metric] – max. 400 m ³ /h	min. 16 t/h [metric] – max. 750 m ³ /h max. 1,000 t/h [metric]	min. 40 t/h [metric] – max. 1,250 m ³ /h max. 1,000 t/h [metric]
Feed rate Feeding unit			
Prefeeder – Feeding unit screw	max. 80 m ³ /h	max. 80 m ³ /h	
Prefeeder – star feeder	max. 100 m ³ /h	max. 100 m ³ /h	
Prefeeder – flow gate	max. 400 m ³ /h	max. 750 m ³ /h	max. 800 m ³ /h
Measuring/feeding range		1:5	
Material temperature		max. 100 °C	
Grain size		max. 10 mm Individual grains up to 30 mm	
Precision based upon actual feed rate ⁽¹⁾		± 2%	
Options	⁽¹⁾ Greater precision levels (± 1%) are possible with on-stream calibration.		
Protection against wear		❖	
Design for hot materials		max. 200 °C	

Weighing Sensors

Developed by the scale experts

for all standard requirements and any other job,
no matter how specialized

Whether you need conventional solutions for regular tasks or you want to weigh something in a difficult location, Schenck Process, provides you everything you need from the standard unit to the weighing sensors that are capable of turning practically anything into a scale all from one source. Accuracies range from $\pm 0.05\%$ to the highest precision legal-for-trade C5 and C4 Mi-7.5 ($\pm 0.01\%$); we can provide the accuracy that meets your needs. For low weight values from 5 kg to heavy weight values of 470 tons [metric]. Regardless of the environment where you intend to set up the weighing technology, we have the appropriate sensor for the most varied weighing forms and installation conditions. Be it hazardous area applications, environmental conditions that require protection types up to IP 68 or hot applications with temperatures of up to 150 °C.

Entrust your weighing tasks to the inventors of load cells. Contact the weighing experts – experts who know their business and who understand your needs.

Schenck Process Weighing Sensors



RTB/RTN Ring Torsion Load Cells

Extremely wide application range. For example, used to reliably and very accurately check the filling of valuable bulk material in case of hopper scales.

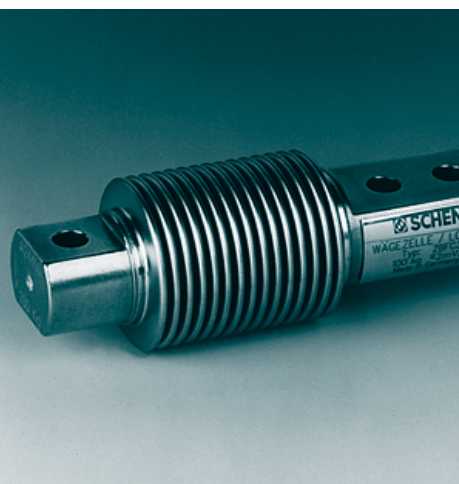
RTN Rated load: 1–470 t [metric]

Accuracy classification: $\pm 0.05\%$ to

C5–C4 Mi-7.5

RTB Rated load: 0,19–0,5 t [metric]

Accuracy classification: C3 Mi-7.5, C6



VBB Load Cells

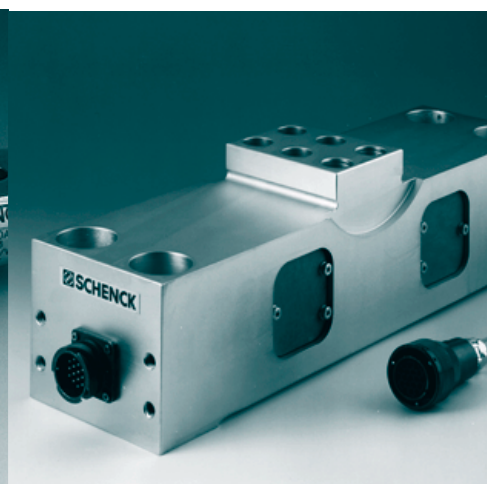
Ideal for rated loads under 1t [metric].

Reliable and calibrated accuracy.

Rated load: 0.1–0.5 t [metric]

Accuracy classification: D1–C4

(not pictured: elastomer mounts)



DWB Weighbeam

Direct weighing technology: the smart solution that can be easily screwed directly to the connecting construction without moving parts. This beam is used for special installation methods and rough environments – for instance in the pan turret of a steel mill.

Rated load: 1–200 t [metric]

Accuracy classification: $\pm 0.3\%$ – 0.1%

Custom design: 1–800 t [metric]

The appropriate mount for every application

DKM/VKN Compact Mount

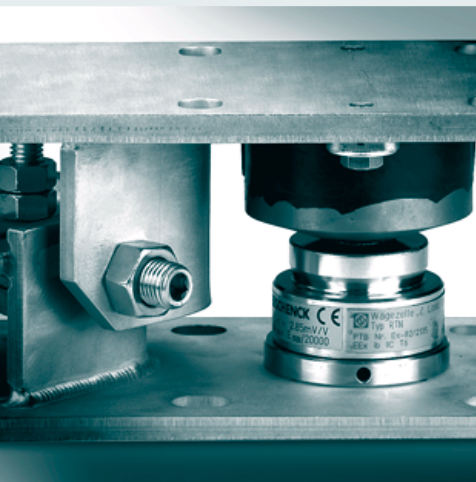
Maintenance-free complete solution with integrated hold-down and pendulum limit.
Rated load: 0,25–470 t [metric]

DEM/VEN Elastomer Mount

Universal load cell mounts for various industrial scales.
Rated load: 0,25–470 t [metric]

VPN Pendulum Mount

Especially for difficult environments and highest accuracy.
Rated load: 1–470 t [metric]



DMA Measuring Eye

This sensor for recording forces and fill levels is easy to retrofit into existing structures. It can also be used in high-temperature environments, up to protective classification 68.

Advantages

- ❖ Weighing sensors from experts
- ❖ Broad product range
- ❖ Special weighing sensor for every application imaginable
- ❖ Highly accurate and legal-for-trade weighing in any environment
- ❖ 24/7 Service, from delivery to the replacement part
- ❖ RTN load cells: Test certificate for legal-for-trade use in the EU, Switzerland, Czech Republic, USA, South Africa, Australia, and China. Other countries available upon request.

Options and Additional Peripherals

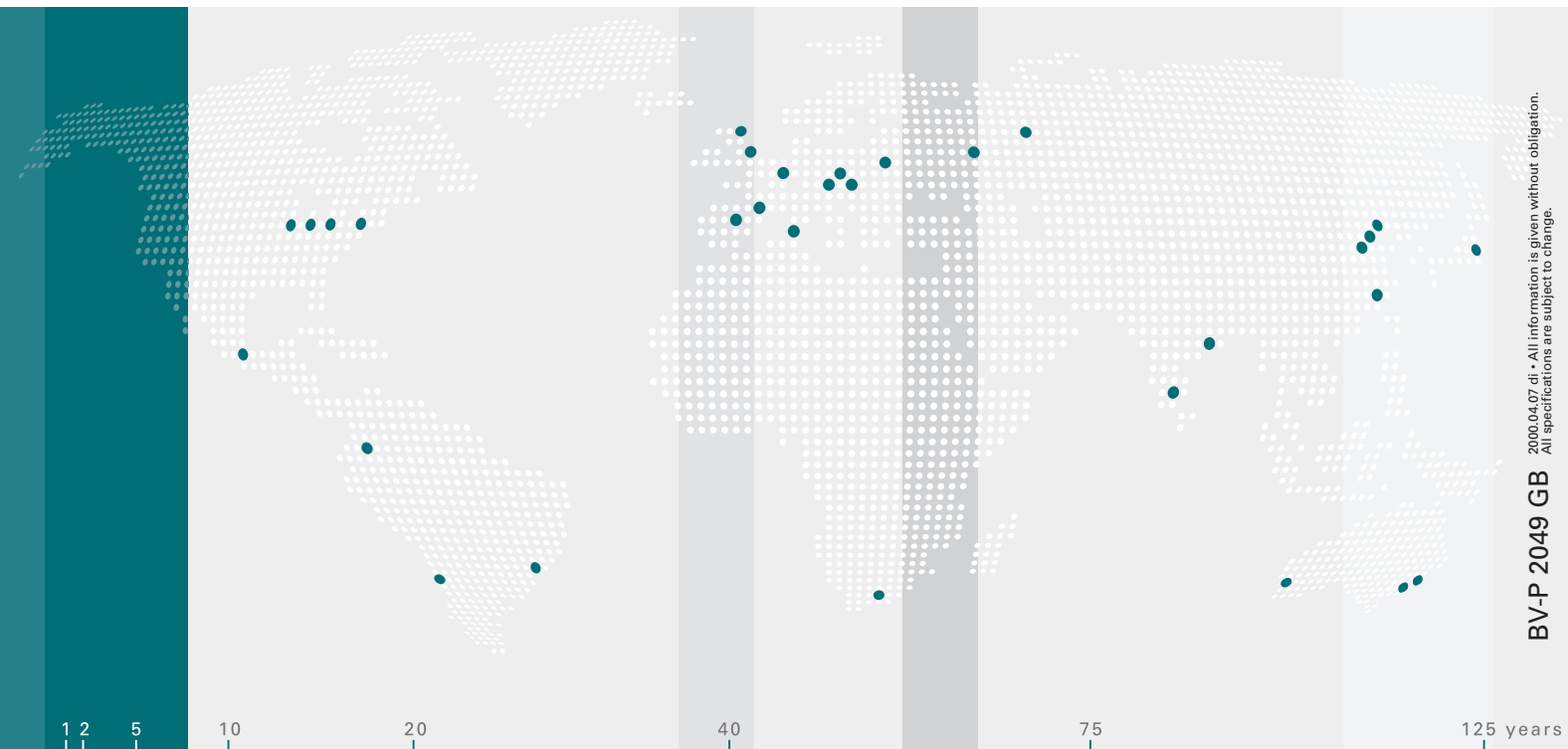
- ❖ Varying cable lengths
- ❖ Explosion-proof versions with ATEX registration for hazardous areas (gas/dust)
- ❖ Specially adapted corrosion protection

weighing

feeding

screening

automation



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Schenck Process is the global market leader of solutions in measuring and process technologies in industrial weighing, feeding, screening and automation.

Schenck Process develops, manufactures and markets a full range of solutions, products and turnkey systems on the basis of combining process engineering expertise, reliable components and field-proven technology.

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we make processes work